SPACE POLICY AND FUNDING: MILITARY USES OF SPACE

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ISSUE DEFINITION

Although satellites have supported the military mission since the beginning of the space age, military uses of space have only recently become a subject of concern in Congress and to the public at large. Three factors which have led to increased awareness of the military aspects of space are: the flights of the space shuttle, which will be used for military as well as civilian launches; increases in the budget for U.S. military space activities, so that it now surpasses that for civilian space activities; and the prospect of space-based weapons of either conventional or directed-energy design.

This issue brief addresses policy issues related to the military uses of space, including the NASA/DOD relationship, funding levels for DOD space activities, and the perceived "militarization" of space. Civilian space policy issues are discussed in IB 82118, Space Policy and Funding: NASA and Civilian Space Programs. Additional issue briefs are available on specific topics: Star Wars: Antisatellites and Space-Based BMD, IB 81123; LANDSAT - Earth Resources Satellite System, IB 82066; Space Shuttle, IB 81175; Space Stations and Space Commercialization, IB 83147; and Commercialization of Landsat and the Weather Satellites, IB 83072.

BACKGROUND AND POLICY ANALYSIS

In addition to the more familiar space programs run by the National Aeronautics and Space Administration (NASA), the United States conducts an extensive military space program under the auspices of the Department of Defense (DOD). DOD satellites are used for a variety of functions, including reconnaissance (photographic, electronic, early warning, ocean surveillance, and nuclear explosion detection), communications, navigation, meteorology, and geodesy. DOD is also developing an antisatellite (ASAT) device which will be able to destroy the operational capability of satellites in low earth orbit; the Soviets already have such a capability. Issues concerning ASATs are discussed in IB 81123.

DOD's space budget is now greater than that of the total NASA budget (including aeronautics). For FY84, DOD received approximately $10.6 billion for space activities, compared to the $7.2 billion appropriated to NASA (including aeronautics).

DOD SPACE PROGRAMS

DOD has developed a number of operational unmanned space systems as noted above, many of which have civilian counterparts. There are military and civilian communications, weather, and geodetic satellites, and the civilian sector uses DOD's navigation satellite system. Civilian land remote sensing satellites (such as Landsat) are close relatives of military reconnaissance satellites.

Until the space shuttle program, however, manned space activities were the province of NASA. Plans were developed for three manned military space programs, but all were cancelled prior to the flight test phase. The

Dyna-Soar program would have involved a reusable manned spacecraft similar in principle to the space shuttle (but not as large). The program was cancelled in 1962 when DOD decided to pursue the Manned Orbiting Laboratory (MOL) program, which, as it name implies, would have developed a military space station. At the same time, plans developed for a "Blue Gemini" program, that is, the Air Force's adaptation of NASA's Gemini spacecraft for military use. The MOL program was cancelled in 1969 because DOD could not sufficiently justify the need for manned space systems; Blue Gemini, which would have ferried crews to the MOL, suffered a similar fate.

In the early 1970s, when NASA decided that it wanted to develop a reusable spacecraft, a policy decision was made by the Nixon Administration that this vehicle would serve all national requirements, military and civilian. Thus, DOD had a voice in the design of the space shuttle -- in determining, for example, the dimensions of the cargo bay so that it could accommodate DOD satellites. DOD agreed to construct a launch site for the shuttle at Vandenberg Air Force Base and to develop an inertial upper stage for getting spacecraft into higher orbits than are accessible by the shuttle. In return, NASA agreed to charge DOD a lower price for launching satellites via the shuttle for the first 6 years of operations. DOD's role in the shuttle program is discussed in the ISSUES section, and in IB81175.

Launches of military satellites take place from either Cape Canaveral, Florida, or Vandenberg Air Force Base, California. As noted above, DOD is currently preparing a site at Vandenberg for launches of the space shuttle beginning in 1985. Those satellites which must be placed in very high inclination (polar) orbits will be launched from Vandenberg, whether they are DOD or NASA payloads.

The primary control center for DOD satellites is the Satellite Control Facility in Sunnyvale, California. DOD is constructing the Consolidated Space Operations Center (CSOC) in Colorado Springs, Colorado to provide a more up-to-date and secure facility than the one at Sunnyvale. CSOC will consist of two elements (with the possible addition of other elements if needed): the Satellite Operations Center (SOC) which will share the workload with Sunnyvale, and the Shuttle Operations and Planning Complex (SOPC) which will control DOD shuttle missions and serve as back-up to NASA's shuttle control facility at Johnson Space Center. The SOC portion of CSOC is planned to be operational by late 1986, with the SOPC reaching operational status in late 1987.

DOD Organization for Space Activities

Air Force. The Air Force acts as DOD's executive agent for space activities (although the Army and Navy also have their own space activities). In October 1981, the Air Force established a directorate of Space under the AF Deputy Chief of Staff for Operations. Previously, space matters had been handled only under the Deputy Chief of Staff for Research and Development. The directorate provides a focus for space activities in an operational, rather than R&D, sense.

On Dec. 8, 1981, Congressman Kramer introduced H.R. 5130, a bill to change the name of the U.S. Air Force to the U.S. Aerospace Force, and to direct the Secretary of the U.S. Aerospace Force to submit to Congress a report on the desirability of creating a Space Command within the U.S. Aerospace Force. The bill was referred to the Armed Services Committee and hearings were held May 19, 1982.

On June 21, 1982, the Air Force announced that it would establish a Space Command, headquartered in Colorado Springs, effective Sept. 1, 1982. The Space Command is headed by Gen. James v. Hartinger, who retained his position as Commander in Chief of the North American Aerospace Defense Command (NORAD). AF Space Division (AFSD) in California continues to be a part of AF Systems Command, but AFSD's head is also Vice-Commander of Space Command, thereby establishing a working relationship between the two.

Space Commmand has assumed responsibility for weather and early warning satellites and other missile warning and spacecraft tracking devices, and will operate CSOC when it is completed. For the time being, however, other space activities will not be transferred to Space Command. AF Systems Command will continue to have responsibility for AFSD, including the Satellite Control Facility at Sunnyvale, California. When operational, the NAVSTAR, MILSTAR, and ASAT systems will be transferred to AF Space Command.

At the same time, the Air Force announced creation of a new Space Technology Center at Kirtland AFB, New Mexico, under the direction of Systems Command. The new center reflects a realignment of Systems Command laboratories, and incorporates the AF Geophysics Lab, Rocket Propulsion Lab, and Weapons Lab.

Navy. Navy Secretary John Lehman announced on June 15, 1983, that the Navy would form its own space command, designated NAVSPACECOM, effective Oct. 1, 1983. The organization is headquartered at Dahlgren, Virginia, and reports to the Chief of Naval Operations. Among the organizations that are assigned to NAVSPACECOM are the Naval Space Surveillance System located at Dahlgren, the Naval Astronautics Group at Point Mugu, California, and elements which support the Fleet Satellite Communications (FLTSATCOM) program. Former astronaut Capt. Richard Truly is head of NAVSPACECOM.

Unified Space Command. Representative Kramer introduced H.R. 3073, the People Protection Act, on May 19, 1983. An identical bill, S. 2021, was later introduced by Senator Armstrong. Among the provisions in the bills is the recommendation that a Unified Space Command be established to consolidate the space and strategic defense activities of all the Armed Forces into one operational command under the Joint Chiefs of Staff. The Air Force submitted a proposal to the Joint Chiefs of Staff, which reportedly voted in favor of establishing such an entity in November 1983, although no formal announcement has been made.

U.S. MILITARY SPACE POLICY

The division of the U.S. space program into separate military and civilian components was ordered by President Eisenhower because of his concern that the United States be perceived as pursuing peaceful applications of space. Although the Army had been developing technology which would later be used to launch the first U.S. satellite (Explorer) into orbit, Eisenhower would not permit the Army to use that technology for space purposes until after the Soviet Union had embarrassed the United States by placing the first satellite into orbit in October 1957, and after the civilian launch vehicle Vanguard had failed to successfully launch a satellite into orbit for the United States.

Nevertheless, Eisenhower was adamant that a separate civilian space agency

be created, and this was accomplished in the 1958 National Aeronautics and Space Act (NASAct) which created NASA to conduct civilian space activities, while leaving military space programs under the jurisdiction of DOD. The Army team that developed rocket technology (the Army Ballistic Missile Agency's Development Operations Division, headed by Werner von Braun) was transferred to NASA.

President Carter's Directive on Military/Civil Space Relationships

Throughout the 1960s and 1970s, the space policy contained in the NASAct remained the basis for U.S. space programs. In 1978, President Carter reviewed national space policy to determine if any changes were required in light of the 20 years of space activities. His review culminated in two directives issued in 1978. The first of these, PD-37, addressed the relationship between U.S. military and civilian space programs. (The second concerned the civilian space program only, and is discussed in IB82118.) An unclassified fact sheet on PD-37 was released in July 1978. Questions had arisen over whether the two space programs should continue to be separate, or whether the division was creating an unnecessary duplication of capabilities and leading to funding competition between NASA and DOD. In addition, there were questions over utilization of the space shuttle: what would happen if a civilian payload was scheduled for launch but DOD unexpectedly had a requirement to launch a military payload; and would the security requirements for DOD operations compromise the open nature of NASA's program?

Regarding the separation of the two programs, the PD-37 fact sheet stated that "the United States will maintain current responsibilities and management relationships among the various space programs, and, as such, close coordination and information exchange will be maintained among the spce sectors to avoid unnecessary duplication and to allow maximum cross-utilization of all capabilities." Concerning shuttle utilization, the directive said that the space shuttle would provide "launch priority and necessary security to national security missions while recognizing the essentially open character of the civilian space program."

PD-37 established a Policy Review Committee (Space) within the National Security Council to "provide a forum to all Federal agencies for their policy views, to advise on proposed changes to national space policy, to resolve issues referred to the Committee, and to provide for rapid referral of issues to the President for decision as necessary." This committee was abolished at the end of the Carter presidency.

President Reagan's Military Space Policy

On July 4, 1982, President Reagan released his space policy for both military and civilian programs. The first goal listed in the space policy directive was strengthening the security of the United States. In other areas of military space activities, the new policy directive stated that survivability of space systems will be pursued commensurate with the threat, with the planned use in crisis and conflict, and with the availability of other assets to perform the mission; and the United States will proceed with development of an antisatellite (ASAT) system both to deter threats and, "within such limits imposed by international law, to deny any adversary the use of space-based systems that provide support to hostile military forces."

The President stated in the directive that the military and civilian programs would continue to be separate entities, but outlined several guidelines for cooperation and coordination between the two.

The directive also created a Senior Interagency Group (SIG) on Space to provide a forum for all Federal agencies involved in space activities. The SIG (Space) is chaired by the Assistant to the President for National Security and includes the Deputy Secretary of Defense, Deputy Secretary of Commerce, Director of Central Intelligence, Chairman of the Joint Chiefs of Staff, Director of Arms Control and Disarmament Agency, and the Administrator of NASA. Representatives of OMB and OSTP are included as observers, and other interested agencies will participate based on the subjects to be addressed.

The President announced the release of the directive at welcoming ceremonies for the crew of the fourth shuttle flight (the first to carry a military payload). Neither his speech nor the space policy directive addressed two items considered important by space program supporters: whether the country should procure a fifth shuttle orbiter and whether the country should place increased emphasis on developing a permanent manned presence in orbit (a space station).

In August 1982, DOD released an unclassified fact sheet (based on a classified study) outlining DOD space policy. According to the fact sheet, DOD and NASA will continue to cooperate under existing agreements to carry out the terms of the President's July 4 space policy message, and DOD "recognizes" the space shuttle as the country's primary launch system "and the need for the DOD to continue to cooperate with NASA efforts to develop a fully operational Space Transportation System." Regarding weapons in space, the fact sheet states that the development of an ASAT capability shall be continued "within such limits imposed by international law" and adds that DOD planning "emphasizes adherence to the existing international legal regime which pertains to space" and that DOD will "consider verifiable and equitable arms control measures that would ban or otherwise limit the deployment of specific weapons systems should those measures be compatible with United States national security." According to the fact sheet, the new policy contains "no new directions in space weaponry" but only provides support for continued research and planning.

On Mar. 23, 1983, in a televised address to the Nation, President Reagan noted that the United States had increasingly based its strategy of deterrence "upon the threat of retaliation." He then asked if it wouldn't be better if the United States could "intercept and destroy strategic ballistic missiles before they reach our own soil or that of our allies" instead. He then announced that he would direct a "comprehensive and intensive effort to define a long-term research and development program to begin to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles." According to press accounts, the White House had indicated prior to the speech that these references included the possibility of establishing a space-based ballistic missile defense system, although they cautioned that this was not necessarily an endorsement of the High Frontier concept, and that the long-term R&D effort would include a wide array of potential technologies, including, but not limited to, lasers, particle beams, and microwaves. Issues related to this debate are discussed in IB 81123.

HIGH FRONTIER PROJECT

In March 1982, the High Frontier Project (then affiliated with the conservative Heritage Foundation) released a report entitled "High Frontier: A New National Strategy." Prepared under the direction of Lt. Gen. Daniel Graham (Ret.), former head of the Defense Intelligence Agency, the report outlined a new national strategy for defending the United States. According to Graham, it would move the country from its present strategy of Mutually Assured Destruction to Assured Survival.

The program described in the report consists of eight interrelated systems, many of which involve the use of space: (1) a space-based ballistic missile defense (BMD) system using conventional technology, which would involve launching 432 satellites, each armed with 40-50 homing interceptors (a second generation BMD system based on laser technology is also mentioned); (2) a swarm jet point defense system for U.S. ICBM silos; (3) improved civilian defense; (4) improvements to the space shuttle to shorten turnaround time and develop an unmannned version of the system; (5) development of an Orbital Transfer Vehicle for moving objects from one orbit to another; (6) development of a manned high performance space plane (also referred to as a space cruiser or space jeep) for inspection/repair/reconaissance missions; (7) an orbiting space station for both military and civilian uses; and (8) a prototype solar power satellite system for generating and transmitting electricity either to a space station or to Earth.

According to the study, the entire program would cost $50 billion over the course of 10 years, but these estimates have been criticized as being too low. Another criticism is that deployment of a space-based BMD system using conventional technology would be contrary to the 1972 ABM Treaty.

SOVIET MILITARY SPACE ACTIVITIES

The Soviet Union conducts an extensive military space program. Since the Soviet space program is under the control of the Soviet Strategic Rocket Force, the argument is sometimes made that the entire program is military. In fact, the Soviets use space for essentially the same purposes as the United States, including both civilian and military science and applications. The Soviets do appear to place a greater emphasis on military applications of space, however, and have several military space systems which the United States does not. For example, the Soviets use space-borne radars for ocean surveillance, which reportedly allows them to track ships at sea, in addition to the more common ocean surveillance spacecraft which intercept electronic signals.

The Soviets have developed two weapons systems which involve the use of space (excluding ICBMs, which also reach into space for a short part of their trajectory). The first, called a Fractional Orbital Bombardment System (FOBS), is essentially an extremely long range ICBM which would reach the United States via a trajectory over the South Pole, thus avoiding North American early warning radars which point to the north. The FOBS warhead does not actually go into orbit, but is designed to complete slightly less than one orbit before being ordered down to impact its target on the surface. No tests of the FOBS systems have been conducted since 1971, and opinion in the West is divided as to whether the tests stopped because the Soviets

decided the system was not worthwhile, or because it is operational and therefore does not require further testing.

The second space weapons system, an antisatellite (ASAT) device, is fully discussed in IB 81123. In brief, an interceptor spacecraft is launched into a co-orbit with the target satellite. The interceptor maneuvers close to the target and explodes, destroying the operational capability of the target with shrapnel. The Soviets have conducted 20 tests of this system since 1968.

It has been estimated that 60-70% of all Soviet launches each year are for purely military purposes, and another 15% are for joint military/civilian activities. Such distinctions are difficult to draw and are, to some extent, arbitrary. For example, it is difficult to distingush between military and civilian communications and navigation satellites. Nevertheless, the number of reconnaissance spacecraft launched by the Soviets each year (including early warning, ocean surveillance, etc.) does comprise a significant percentage of their annual space activity. It should be borne in mind, however, that Soviet photographic reconnaissance satellites remain in orbit for relatively short periods of time (either 2 or 6 weeks) and therefore must be replaced more often than their U.S. counterparts, which reportedly can remain in orbit for months or years.

The Soviet Union is thought to be less reliant on space systems for command and control functions than the United States (approximately 70% of U.S. overseas military communications are transmitted via satellite). Nevertheless, satellites do make up a significant part of its war fighting capability. The following categories of Soviet military satellites have been identified: photographic reconnaissance, early warning, radar ocean reconnaissance, electronic ocean reconnaissance, electronic ferreting, communications (including store/dump), geodesy, navigation, meteorology, minor military (including radar calibration), manned systems (involving military use of Salyut space stations), and weapons (antisatellites and FOBS).

INTERNATIONAL INTEREST IN MILITARY SPACE ACTIVITIES

Other Launching Countries

As more countries become able to launch satellites into space, they will also be able to launch military satellites if they so desire. France, for example, which is the major contributor to the European Space Agency's Ariane launch vehicle program, is considering placing a military reconnaissance satellite (called SAMRO) into orbit in the 1980s. Although the project was temporarily shelved in late 1982 because of budget constraints, it has not been cancelled. Japan has also indicated interest in such satellites, although it would need U.S. permission to place such a satellite in orbit because of an agreement it signed with the United States in order to receive permission to manufacture launch vehicles based on U.S. technology. China already has orbited several spacecraft which are thought to be prototypes for reconnaissance spacecraft, and India may also develop such spacecraft.

It should also be noted that just as orbital launch vehicle technology in both the United States and Soviet Union developed from military missile technology, the reverse can also be true. Thus a country with the ability to launch spacecraft into orbit also possesses a significant long range missile

capability.

United Nations Involvement

The U.N. Committee on Peaceful Uses of Outer Space (COPUOS) was the forum in which two treaties (see below) were developed that restrict military activities in space and on the Moon and other celestial bodies. In addition to the COPUOS activities, the United Nations General Assembly has referred the topic of militarization of space to the Committee on Disarmament (CD). (Technically, the CD is not part of the U.N., but it has a close association with that organization.)

In August 1982, COPUOS sponsored the Second U.N. Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE'82). One of the major issues discussed at the conference was the growing concern over increased military activities in space, and three paragraphs were included in the final report of the conference reflecting this concern.

At its meeting in the fall of 1982, the CD set aside one week of its deliberations for discussion of military space issues. Discussions are underway at the CD to establish a working group to deal with this issue.

TREATIES RESTRICTING MILITARY ACTIVITIES IN SPACE

Several treaties exist which restrict the use of earth orbit, the Moon and other celestial bodies, for military purposes. The two treaties developed by COPUOS are the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space (the Outer Space Treaty) which prohibits the use of nuclear weapons or other weapons of mass destruction in orbit, and the 1979 Agreement Governing The Activities of States on the Moon and Other Celestial Bodies (the Moon Treaty) which prohibits the use of the Moon and other celestial bodies for any military activities including the testing or deployment of weapons (this treaty is not in force yet).

In addition, the 1963 Limited Test Ban Treaty prohibits the explosion of nuclear weapons in space, and the 1972 SALT I agreement bans the deployment of space-based antiballistic missile systems (except those based on "other physical principles" which are subject to further discussion), and prohibits interference with "national technical means of verification," which presumably includes reconnaissance satellites.

In 1981, the Soviet Union introduced a draft treaty at the United Nations to ban all weapons from space, although it would not ban either the antisatellite system that has been tested by the Soviets since 1968 (since it is ground-based) or the one being developed by the United States (since it is air-based). A revised draft was introduced by the Soviets in August 1983 which would ban the use of force in space. It also calls for the dismantlement of existing ASAT systems, although the Soviets still have not admitted that they have such a device. Furthermore, the draft would ban the military use of manned spacecraft such as the space shuttle and Soviet space stations.

THE PEOPLE PROTECTION ACT

On May 19, 1983, Representative Kramer and 11 co-sponsors introduced H.R. 3073, the People Protection Act. The bill would have Congress "encourage the President to implement those measures needed to protect people and to reduce dependence on nuclear retaliatory strategies." Among the provisions in the bill are recommendations to: establish a new agency to consolidate the directed energy development activities of the Armed Forces, DOD, and DOE; create a Unified Space Command; establish a new command in the Army for ground-based strategic air defenses and ballistic missile defense, and to put that command under the Unified Space Command; transfer to DOD those space launch vehicles and associated elements that are necessary for the conduct of national military space activities; order the immediate development of a manned space station capable of supporting national security and other activities in space; and to assess (a) the role of strategic defenses as verification safeguards and enforcement mechanisms within current and prospective arms control agreements, (b) the consistency of the 1972 ABM treaty with existing international legal conventions for the regulation of armed conflict, and (c) other organizational changes within the Government needed to implement the President's strategic recommendations. A press release accompanying the bill clarified that the space launch systems referred to are those space shuttles which will be used for national security missions, and that NASA would be responsible for developing the manned space station. The bill was referred to the Armed Services, Foreign Affairs, and Science and Technology Committees. Hearings were held on Nov. 10, 1983, by the Armed Services Committee. An identical bill, S. 2021, was introduced by Senator Armstrong and referred to the Senate Armed Services Committee.

DOD SPACE BUDGET

Unlike the NASA budget, which has remained essentially level except for increases due to inflation for the past several years, the DOD budget for space-related programs has grown considerably in recent years. The following table provides the FY83 and FY84 appropriation levels for these programs and the FY85 request.

DOD SPACE-RELATED FUNDING (in $ millions)

Program	FY83 Approp.	FY84 Approp.	FY85 Request
Mission Oriented			
Navigation	290.0	460.0	576.6
Communications	1,340.0	1,406.0	1,721.0
Warning	710.0	756.9	561.1
Mapping/Charting/ Geodesy	100.0	79.9	77.7
Weather	230.0	110.1	299.7
Vehicle Development	1,070.0	1,214.2	1,534.9
Space Ground Support	600.0	806.9	1,054.4
Supporting R&D	900.0	1,098.7	1,288.5
General Support	3,270.0	4,657.6	5,798.8
TOTAL	8,510.0	10,590.3*	12,912.7

*DOD continues to revise its accounting for space activities, and now states that the FY84 request and appropriation was $10,590.3 million, instead of the $9,881.5 million reported earlier, or the $9,239.0 million reported before that.

FY83

For FY83, DOD requested a total of $8.5 billion for space activities; Congress appropriated $8.51 billion. A breakdown by program area is provided in the preceding table.

The DOD authorization bill was signed into law on Sept. 8, 1982 (P.L. 97-252). Action was not completed on the DOD appropriation bill, so its provisions were incorporated into the FY83 Further Continuing Appropriations Bill (P.L. 97-377). The military construction authorization bill was signed into law on Oct. 15, 1982 (P.L. 97-321); the military construction appropriations bill became law the same day (P.L. 97-323).

Space-Based Laser Research. One of the most controversial issues in the DOD space budget in FY83 was what type of research to fund for development of space-based lasers (SBLs). DOD has focussed on chemical lasers, since they are further along technologically than alternatives, such as short wavelength lasers, that might be more effective SBLs.

In its report on the DOD authorization bill (H.Rept. 97-482), the House Armed Services Committee recommended that the chemical laser program be terminated and replaced with an expanded effort for short wavelength lasers. Conversely, the Senate Armed Services did not make any change to the SBL request when it reported the bill (S.Rept. 97-330). Also, during floor debate on the bill on May 13, 1982, an amendment was adopted directing DOD to produce an orbital laser weapons system "as quickly as technology will allow," although no funding was added for this purpose.

The conference report (H.Rept. 97-479) on the authorization bill offered a compromise whereby both development programs were supported, although funding for the Air Force's program ($41 million) was denied. The Senate "reluctantly" agreed to delete the wording that it had adopted regarding an on-orbit demonstration.

DOD Payments to NASA for Space Shuttle Launches. As discussed in IB81175 -- Space Shuttle, Congress expressed concern during the FY83 budget process that DOD was not paying its full share of shuttle costs. DOD and NASA had reached an agreement in 1977 whereby DOD would pay less for each shuttle launch than non-DOD shuttle users for the first 6 years of shuttle operations because DOD was developing an upper stage for the shuttle and preparing a west coast launch site.

At the time action was occurring on the FY83 DOD authorization bill, other congressional committees were calling for DOD to begin paying the same price as non-DOD users starting in FY83. The House adopted an amendment during floor debate on the DOD authorization bill on July 29 stating that DOD could not transfer funds to NASA for shuttle launch costs in excess of those amounts required by law and interagency agreements in effect as of July 1, 1982. This language was incorporated in the final version of the bill. Since the actions by the other committees never became law, however, this provision is moot.

Consolidated Space Operations Center (CSOC). The House and Senate Appropriations Committees expressed concern that the computers that had been selected for CSOC were obsolete. The Senate committee reduced funding for CSOC in its report on the DOD appropriation bill by $8.7 million (S.Rept. 97-580), while the House provided the full request of $32.1 million (H.Rept.

97-943). In conference, agreement was reached whereby a middle level of funding was provided ($28 million), but the conferees stated that they shared the concerns of the Senate and directed the Air Force to submit a report on CSOC's computer architecture, with the possibility of reprogramming money for the facility after the report was received.

Funding for CSOC was also included in the military construction bill ($67.7 million) and this was approved without change, although language was included in the appropriation bill directing a study not only of the computer systems, but also of right-of-way agreements for the land on which CSOC is being built.

Vandenberg AFB Shuttle Launch Site. During action on the military construction bills, Congress expressed concern about the delays and rising costs associated with construction of a west coast launch site for the space shuttle at Vandenberg Air Force Base.

The authorization bill provided full funding ($40 million) for construction of an environmental shelter for the shuttle at Vandenberg, but reduced funding for other facilities modifications from $26.5 million to $14.8 million.

In its report on the bill (H.Rept. 97-726), the House Appropriation Committee noted that the cost may rise from the original estimate of $252 million to $882 million. While stating its concern that the funding already spent "may not result" in a "usable facility," the committee added that there probably was no alternative to completing the facility, and recommended steps to monitor costs and construction more closely. The full request for the shuttle environmental shelter was approved contingent upon a review of final plans and costs for the project, but funding for other facilities modifications was cut by $4.3 million more than in the authorization bill (to $10.5 million). These actions were adopted in the final bill.

FY84

For FY84, DOD requested $9.9 billion for space-related activities; Congress appropriated approximately that amount (final figures are not yet available), although in some cases funding within categories (such as lasers) was redirected. The DOD authorization bill was signed into law on Sept. 24, 1983 (P.L. 98-94), and the DOD appropriation bill became law on Dec. 8, 1983 (P.L. 98-212). The military construction authorization bill was signed into law on Oct. 11, 1983 (P.L. 98-115), and the military construction appropriation bill became law on the same day (P.L. 98-116).

Directed Energy Research. Funding for laser research was again controversial, with Congress reiterating its concern that DOD was emphasizing chemical lasers instead of short wavelength lasers which hold more promise. In areas related to development of space-based lasers, DOD requested $36.1 million for the Air Force Space Laser Program, $82.5 million for the Air Force Advanced Radiation Technology Program (which includes the Airborne Laser Laboratory), $45 million for DARPA's High Energy Laser Technology program (including Teal Ruby), and $127.5 million for the DARPA Space Laser Triad program (Alpha, LODE, and Talon Gold). For particle beam weapons, DOD requested $33.1 million in the DARPA budget. Other funding for high-energy laser programs not specifically related to space-based lasers and for particle beam weapons was included in the Army, Navy, Air Force, and DARPA budgets, but is not discussed here other than to say that a total of $500

million was appropriated for all forms of directed energy research for all the services, of which $56 million was for particle beams, and $441 million was for high energy lasers (the remainder was for technologies such as pulsed power microwaves.)

Congress denied all funding for the Air Force Space Laser Program, but created a new Air Force program called the Strategic Laser Systems Technology program for which $60 million was authorized, and $51.5 million was appropriated. For the Air Force Advanced Radiation Technology program, the authorization bill deleted $20 million, terminating the Airborne Laser Laboratory program. The appropriation bill reduced that amount by another $10 million, for a total appropriation of $52.5 million. Of this amount, $28 million is for space laser systems and $23.5 million for research into visible/ultraviolet laser technolgoy. (The House Armed Services Committee had recommended a separate line item of $80 million for the AF Space Command to study visible/uv lasers, but this was not adopted.) Language was added stating that the $23.5 million could not be obligated until the Fletcher Commission report on strategic defense initiatives was completed. All requested funding for the DARPA laser and particle beam programs was approved, and $30 million was added for its High Energy Laser Technology program.

Space Weapons Policy. Although Congress approved the $225 million requested for the U.S. ASAT program, of which $19.4 million was for procurement, language was added to both the authorization and appropriation bills requiring the President to take some sort of action on space arms control (these issues are discussed at length in IB81123).

In the authorization bill, language was included which states that no tests of the U.S. ASAT device against space objects can be conducted until the President certifies to Congress (1) that he is endeavoring in good faith to negotiate a ban on ASATs with the Soviet Union, and (2) that in the absence of such a ban, such tests are necessary for national security. The language had been adopted unanimously by the Senate based on an amendment introduced by Senator Tsongas, and approved in the conference report on the bill.

Three other amendments related to this topic were rejected. In the House, an amendment introduced by Representative George Brown to delete the procurement funding for the ASAT until Congress had more time to consider the implications of deploying ASAT weapons was defeated; R&D funding would not have been affected. Later, the House also rejected a Seiberling amendment which would have prohibited testing of the U.S. ASAT device until expressly authorized by Congress. In the Senate, a Wallop amendment was defeated which sought to increase funding for space-based lasers and to place the program under the management of the Army instead of DARPA.

During its consideration of the DOD appropriation bill, the House Appropriations Committee denied procurement funding for the ASAT program and required the President to submit an unclassified report by Mar. 30, 1984, providing a comprehensive U.S. policy on arms control in space. The House made no attempt to change the committee's recommendation, but the Senate did not make a similar move. The conferees agreed to withhold the procurement money until the President submits an unclassified report outlining his policy on space arms control, which must be submitted no later than Mar. 31, 1984.

Advanced Military Spaceflight Capability. Congress denied the $2.758 million requested by the Air Force to study advanced systems for military

manned space systems (such as space cruisers).

Space Shuttle. Congress approved the $559 million requested for the space shuttle in the DOD authorization and appropriation measures: $337.4 million for R&D, $195.3 million for procurement, and $26.847 for acquisition and activation of the Vandenberg shuttle launch site. In the military construction bill, however, there was disagreement over funding for specific items related to space shuttle facilities. In the military construction authorization bill, the House denied $6.6 million for construction of a shuttle external tank area icing protection facility at Vandenberg. The Senate approved the funding, and the conference report included the requested amount. In the military construction appropriation bill, the House deleted $700,000 requested for security modifications at NASA's Johnson Space Center (JSC) and $4 million of the $14 million requested for security modifications at Vandenberg, as well as the $6 million for the icing protection facility. The Senate approved all requested funding for these items. The conferees approved the icing protection facility, but adopted the House position on denying funding for security modifications at JSC, and approved $6 million of the $14 million requested for Vandenberg security modifications.

Other Space Programs. Congress approved virtually all other requested funding for space-related items in the DOD budget, including $335 million for NAVSTAR, $220 million for AFSATCOM, $158 million for the Defense Satellite Communications System (adding language to permit multi-year procurement for this system), $61 million for meteorological satellites, $123 million for FLTSATCOM, and $150 million for MILSTAR. Funding for the Integrated Tactical Surveillance System, which reportedly includes concepts for space-based radars with which to track ships, was reduced from $30.2 million to $12 million becuase of congressional concern that many of the projects within the ITSS category had been separated out, and the ITSS program requires rescoping.

FY85

The total amount requested by DOD for space activities in FY85 is $12,912.7 million, an increase of $2,322.4 million, or 22%, over the latest DOD assessment of its funding for space activities in FY84. The FY85 request includes $877 million for the Strategic Defense Initiative. For specific programs, the following amounts are requested: antisatellite program, $226.3 million; NAVSTAR, $435.8 million; Defense Satellite Communications System, $322.8 million; Defense Meteorological Satellite Program, $188.2 million; Air Force Satellite Communications program, $141.6 million; Fleet Satellite Communications system, $63 million; space launch support (upper stages), $301.8 million; space boosters, $45.7 million.

ISSUES

1. The "Militarization" Of Space

The growing interest in military activities in space is centered around the issue of whether or not space is becoming "militarized." All of the issues discussed below relate to that issue, but it should be noted that the definition of the term "militarization of space" depends upon the situation in which it is used, and it is becoming more common to differentiate not between "military" and "peaceful" space activities, but "aggressive" and

"non-aggressive."

Militarization is often used to mean only the use of weapons in outer space, and in particular, advanced concepts of placing laser or particle beam weapons in space for use against satellites and/or ballistic missiles enroute to their targets. Devices to disable satellites already exist (the Soviet system is operational; the U.S. system is under development). These can be considered aggressive space activities, whether they are termed offensive or defensive weapons.

In other contexts, however, the term "militarization" refers to all military uses of space, including those that are "non-aggressive" -- such as reconnaissance, navigation, weather, and communications -- which serve as force multipliers. Navigation satellites, for example, can be used to provide targeting information for submarine launched ballistic missiles. As a result, there have been suggestions to limit the availability of navigation satellites to a short time each day such that ships and aircraft would still be able to determine their positions, but could not use them for targeting missiles.

The utility of satellites as force multipliers, for command and control, and in a weapons context has prompted the concept of space as the new "high ground," providing a vantage point for military commanders. This concept is embodied in the High Frontier proposal discussed earlier. The awareness of the critical role space systems might play in a crisis situation has led to measures to protect existing space systems (for example, the hardening of satellites to protect them from radiation and electromagnetic pulse which might result from a nuclear explosion in space), and to proposals for new programs. The budget for DOD space activities has thus increased in recent years (see issue #4).

2. DOD Contributions to the Space Shuttle Program

The space shuttle is a national space transportation system, serving both the civilian and military communities. President Carter decided that NASA would be responsible for paying all development costs for the shuttle, while DOD is paying for construction of a West coast launch site and for the inertial upper stage. In exchange, NASA and DOD negotiated an agreement in 1977 whereby DOD would be charged a lower rate than other government agencies and commercial users ($12.2 million per launch instead of $18 million (in 1975 dollars) per launch) for the first 6 years of operation.

During consideration of NASA's FY83 budget, concern was expressed by the Senate Commerce, Science, and Transportation Subcommittee on Science, Technology, and Space that DOD was not paying its full share of shuttle costs, and directed DOD to pay full costs for shuttle launches beginning in FY83 (S.Rept. 97- 449). The House had not made a similar provision in its version of the bill, and the compromise that was reached directs NASA to charge "such prices as necessary to recover the fair value" of placing DOD payloads in orbit (P.L. 97-324).

In September 1982, NASA announced a new agreement whereby the price for DOD launches will increase to $16 million (1975 dollars) for launches in FY84 and FY85, with the price rising to $29.8 million (1975 dollars) for FY86-88. According to the agencies, this is an equivalent price to that paid by non-DOD customers, taking into account the exchange of services at Cape Canaveral and Vandenberg.

During hearings on the FY85 NASA budget by the House Science and Technology Committee, Air Force Undersecretary Edward Aldridge stated that while "DOD is fully committed to the STS, total reliance upon the STS for sole access to space...could represent an unacceptable national security risk. DOD believes that a complementary system is necessary to provide high confidence of access to space." Thus, the Air Force announced that it would continue to procure expendable launch vehicles (EVLs) in the future, which is in conflict with existing national policy which states that the space shuttle is to be the only launch system for Government payloads once it is operational.

Other issues concerning DOD involvement in the shuttle program are discussed in IB 81175, Space Shuttle.

3. The NASA/DOD Relationship

The issue of the relationship between NASA and DOD in space activities has two facets. The first is whether or not the two programs duplicate each other, and in a time of constrained budgets, need to exist as separate entities. The arguments in favor of retaining separate programs focus on the open nature of NASA's activities compared with the classified nature of DOD's work. There is concern that if the activities were merged, less information and technological spin-offs would become available to the nation at large, and that other countries might be less willing to participate in cooperative endeavors. There is also concern that military activities would overwhelm the civilian programs and scientific efforts (such as planetary programs and physics and astronomy) would be severely curtailed. Arguments in favor of combining the two focus on the cost effectiveness of reducing overhead costs and duplication of effort. Although President Reagan recently reaffirmed his policy of maintaining separate military and civilian space programs, with continued cooperation and coordination between the two, this continues to be a topic of considerable discussion.

The other aspect of the debate concerns what some people view as the "militarization" of NASA, both in terms of the number of active or retired military personnel working at NASA, and the percentage of NASA programs which directly support military programs (both in space and aeronautics). A 1982 report by the General Accounting Office (see REFERENCES) concluded that 20.5% of NASA's budget (primarily that for the space shuttle) directly supports DOD, with another 7.7% supporting joint civil/DOD activities. NASA contends that only a very small percentage of its funding (0.1%) directly supports DOD, while a larger percentage (66.3%) supports joint civil/DOD activities.

A November 1983 report by GAO ("Implications of Joint NASA/DOD Participation in Shuttle Operations," GAO/NSIAD-84-13) concluded that mechanisms were needed to better coordinate DOD/NASA interaction, supporting a recommendation by the Office of Technology Assessment that consideration be given to reestablishing the National Aeronautics and Space Council in the White House.

4. Increasing Budgets for DOD Space Activities

The budget for DOD space activities has grown significantly in the past several years. In FY82, funding for DOD space activities exceeded that for NASA's space activities for the first time ($6.4 billion versus $5.5

billion). For FY83, the difference was even larger: $8.5 billion for DOD compared with $6.4 billion for NASA. (Figures for NASA do not include aeronautics.) For FY84, DOD received $10.6 billion for space, while NASA received approximately $6.7 billion for space activities.

A number of studies are being performed on future military space activities, including manned systems such as space stations and quick-response space "cruisers" which could be launched from the ground, air, or from the space shuttle. Research is also underway on space-based lasers and particle beam weapons, although no decision has been reached on whether or not to deploy such systems. Such programs are potentially expensive.

In the fall of 1982, Air Force Under Secretary Aldridge was quoted as saying that he expects the budget for military space activities to increase significantly over the next 5 years. He estimated that funding would increase by more than 10% each year above increases for inflation, to a total of $14 billion by FY88 (see New York Times article by Halloran in REFERENCES).

5. Proposal for an International Satellite Monitoring Agency

In 1978, the French Government proposed creation of an International Satellite Monitoring Agency in which the United Nations would use satellites to verify adherence to international treaties in times of crisis, either based on data supplied by countries with reconnaissance satellites or from satellite(s) which the U.N. itself would own. A working group was established to develop details of such a plan, and its report was released in 1982, but no further action has taken place. The United States does not support this proposal.

LEGISLATION

H.R. 5167 (Price)

Authorizes appropriations to the Department of Defense for FY85. Reported from House Armed Services Committee on Apr. 19, 1984 (H.Rept. 98-691).

H.R. 3073 (Kramer et al.)/S. 2021 (Armstrong)

The People Protection Act. A bill to protect people and reduce dependence on nuclear retaliation strategies by establishing a new agency to conduct directed energy technology research, creating a unified space command, transferring certain space launch vehicle (space shuttle) assets to the Department of Defense, and ordering the immediate development of a manned space station for national security and other space activities. Introduced in the House May 19, 1983; referred to Committees on Armed Services, Foreign Affairs, and Science and Technology. Hearings held by House Armed Services on Nov. 10. Introduced in the Senate on Oct. 28; referred to Senate Armed Services Committee.

HEARINGS

U.S. Congress. House. Committee on Appropriations.
Department of Defense appropriations for 1984, part 8.

Role of military in space. Hearing, 98th Congress, 1st session. Mar. 23, 1983. Washington, U.S. Govt. Print. Off., 1983: 429-520.

U.S. Congress. House. Committee on Armed Services. Subcommittee on Research and Development and Subcommittee on Investigations. Hearing on H.R. 3073, People Protection Act. 98th Congress, 1st session. Nov. 10, 1983. Washington, U.S. Govt. Print. Off., 1984. 153 p.

U.S. Congress. Senate. Committee on Foreign Relations. Subcommittee on Arms Control, Oceans, International Operations and Environment. Arms control and the militarization of space. Hearings, 97th Congress, 2d session. Sept. 20, 1982. Washington, U.S. Govt. Off., 1982. 69 p.

----- Controlling space weapons. Hearings, 98th Congress, 1st session. Apr. 14 and May 18, 1983. Washington, U.S. Govt. Print. Off., 1983. 173 p.

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U.S. Congress. House. Committee on Armed Services. Department of Defense Authorization Act, 1984; report to accompany H.R. 2969. Washington, U.S. Govt. Print. Off., 1983. 98th Congress, 1st session. Senate. Report no. 98-107.

----- Military Construction Authorization Act, 1984; report to accompany H.R. 2972. Washington, U.S. Govt. Print. Off., 1983. 98th Congress, 1st session. House. Report no. 98-166.

CHRONOLOGY OF EVENTS

11/10/83 -- House Armed Services Committee held hearings on the People Protection Act.

10/01/83 -- The Navy established its own Space Command, headquartered at Dahlgren, Virginia.

08/22/83 -- The Soviet Union introduced a revised draft treaty at the United Nations to ban the use of force in space.

05/19/83 -- Senate Foreign Relations Committee held hearings on space weapons.

05/02/83 -- Senate Armed Services Committee held hearings on space weapons.

04/14/83 -- Senate Foreign Relations Committee held hearings on space weapons.

03/23/83 -- President Reagan gave a nationally televised address in which he announced a study effort to determine

what type of R&D should be performed on ballistic missile defense systems. Presidential advisors explained that this could include space-based weapons, leading the media to dub this the "Star Wars" speech.

03/23/83 -- House Appropriations Committee held hearings on the role of the military in space.

09/20/82 -- Senate Foreign Relations Committee held hearings on military uses of space, focusing on space weapons.

09/01/82 -- Air Force established a Space Command, headed by the Commander-in-Chief of the North American Aerospace Defense Command (NORAD), in Colorado Springs, Colorado.

09/10/82 -- U.N. Committee on Disarmament completed its 1982 session. No agreement was reached on whether to establish a working group to deal with the issue of militarization of space.

08/09/82 -- The two week UNISPACE conference began in Vienna, Austria. A major topic of discussion was military uses of space.

07/04/82 -- The fourth test flight of the space shuttle (the first to carry a DOD payload) was successfully completed. President Reagan welcomed the crew back, and announced his new space policy for military and civilian programs.

05/19/82 -- Hearings held by House Armed Services Committee on H.R. 5130, concerning establishment of an Aerospace Force and a Space Command.

03/04/82 -- The High Frontier project released its study on devising a new national strategy for defense, focusing on the utilization of space as the "high ground."

10/01/81 -- Beginning of fiscal year 1982, the first year that DOD's budget for space activities surpassed that for NASA's space activities.

06/19/78 -- President Carter's space policy for military and civil programs was announced in a fact sheet released by the White House.

07/29/58 -- The National Aeronautics and Space Act was enacted into law, creating the National Aeronautics and Space Administration to conduct civilian space activities, and leaving military space activities under the jurisdiction of DOD.

01/31/58 -- First U.S. satellite (Explorer) was launched using Army-developed missile technology.

10/04/57 -- World's first satellite, Sputnik 1, was launched by the

Soviet Union.

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